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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/658,463	SATOH ET AL.
	Examiner	Art Unit
	Jin-Cheng Wang	2672

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _8/17/2005_.
2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1,3,4,6-10,12-19,24-29,31 and 32_ is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1,3,4,6-10,12-19,24-29,31 and 32_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR

1.17(e), was filed in this application after final rejection. Since this application is eligible for

continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been

timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR

1.114. Applicant's submission (request for reconsideration) filed 8/17/2005 and 9/16/2005 have

been entered. Claims 1, 10, 19, 31-32 have been amended. Claims 2, 5, 11, 20-23 and 30 have

been canceled. Claims 1, 3-4, 6-10, 12-19, 24-29 and 31-32 are pending in the application.

Response to Arguments

Applicant's arguments with respect to claims 1, 3-4, 6-10, 12-19, 24-29 and 31-32 have been

considered but are moot in view of the new ground(s) of rejection set forth in the present Office

Action based on Daily U.S. Patent No. 6,317,127 (Daily) in view of Ohshima et al. U.S. Patent

No. 6,522,312 (Ohshima).

Although Daily is silent to the claim limitation that "an image of player can be included

in a video sensed by said first video sensing unit", Daily discloses displaying a sub-image of the

wide FOV video signal and a user controllable viewpoint selector such as a head tracker for

tracking the user's head movement to select a user FOV from the wide FOV video signal

(column 5, lines 1-20). In so doing, an image of the user is included in a video of the wide FOV

captured by the fish eye lens 172 or geodesic array of sensors 170 (column 11-12). Therefore,

Daily discloses a head tracker for recording the user's head movement which is an image of the

player/user that can be included in the user's FOV video for display on the user's HMD.

Nevertheless, Ohshima discloses a CCD camera 240 for capturing an image of the player

into a pick-up image (e.g., column 18, lines 40-45), the so called marker image (column 13, lines

35-40) and the CCD camera 230 fixed above the center of the table can capture the entire surface

of the table within its field of view in which multi-valued image data of the surface of the table

sensed by the TV camera is acquired and the CCD cameras 240 fixed to the heads of the players

acquire marker images which are processed to detect positions of tracked markers falling within

the respective fields of view of the individual cameras (column 15, lines 35-40 and column 15,

lines 3-10). The two players can observe the surface of the table when they wear the HMDs. The

players observe a three-dimensional image displayed on the display screen to be superposed on

an image in the real space observed via optical system of the HMDs (column 12, lines 21-30).

The changes in posture of the head of the player is detected by the CCD camera 240 as changes

in image sensed by the camera. In Fig. 7, the image as captured by the CCD cameras 240 can be

included in a video sensed by the video camera 230 within the image generation units 5050L and

5050R.

Therefore, having the combined teaching of Daily and Ohshima, one of the ordinary skill

in the art would be able to include an image of the player/user in a video of the table or the wide

angle FOV. Doing so would allow the customized image generation for a particular player/user

(Ohshima Fig. 7 and Daily column 5, lines 1-20).

Daily discloses a local processor 48 responds to the current user FOV 46 by extracting

that portion of the video signal 22 that lies in the user FOV and its registered symbols 26, maps it

into the user's coordinate system and transmits the subimage 42 to the HMD 40 and the local

processor 48 includes a subimage capture unit 50 that downloads the data from the video and

overlay distribution busses 24 and 36 and stores it in a buffer. Daily further discloses that the

subimage capture unit preferably downloads an oversized subimage such that the tables used to

extract the data off the buses do not have to be updated for small changes in the user's FOV and

a viewpoint display unit 52 reads out the video and overlay data from the buffer for the current

user FOV and transmits the subimage to the HMD.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-4, 6-10, 12-18, 28-29, and 31-32 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Daily U.S. Patent No. 6,317,127 (Daily) in view of Ohshima et al. U.S. Patent

No. 6,522,312 (Ohshima).

1.   Claim 1:

Daily teaches an augmented reality presentation apparatus for superimposing a virtual

object in a real space, characterized by comprising:

Objective viewpoint augmented reality presentation means for superimposing the virtual

object viewed from a first viewpoint position, which differs from any player's viewpoint

position, in the real space viewed from the first viewpoint position (e.g., figure 1, 9-10; column

3-5; column 10-12), wherein said objective viewpoint augmented reality presentation means

includes

First video sensing means for sensing a video of the real space viewed from the first

viewpoint position (*e.g., CCD cameras or a multi-sensor system 152 attached to the underside of*

the airplane to image the hemisphere below the plane, the GPS 154 providing the plane's

current position in coordinates and a second sensor array placed on top of the airplane for

viewing star constellations; figure 1, 9-10; column 3-5; column 10-12);

First video generation means for generating a video of the virtual object viewed from the

first viewpoint position (*e.g., A source processor 16 includes individual channel processors 18*

that group the pixels into packets and a multiplexer 20 that multiplexes the packets into a wide

FOV video signal 22 and the overlay distribution processor 24 interacts with the positioning

system 32, the database 30 to determine which overlay symbols and audio tracks lie within the

current wide FOV and the subimage capture unit 50 downloads the data from the viewo and

overlay distribution buses 24 and 26 and stores it in a buffer; figure 1, 9-10; column 3-5; column

10-12);

First video composition means for composing an augmented reality video viewed from

the first viewpoint position on the basis of the videos of the real space and the virtual object

viewed from the first viewpoint position (*e.g., A source processor 16 includes individual channel*

processors 18 that group the pixels into packets and a multiplexer 20 that multiplexes the

packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with

the positioning system 32, the database 30 to determine which overlay symbols and audio tracks

lie within the current wide FOV and the subimage capture unit 50 downloads the data from the

viewo and overlay distribution buses 24 and 26 and stores it in a buffer; figure 1, 9-10; column

3-5; column 10-12), and

Objective viewpoint video display means for displaying the augmented reality video

obtained from said first video composition means, the objective viewpoint video display unit

being separate from any display unit adapted to display to any player an augmented reality video

viewed from a player's viewpoint position (*e.g., the multiplexer 20 that multiplexes the packets*

into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with the

positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie

within the current wide FOV and the subimage capture unit 50 downloads the data from the

viewo and overlay distribution buses 24 and 26 and stores it in a buffer; A viewpoint display unit

52 reads out the video and overlay data from the buffer for the current user FOV and transmits

the subimage to the HMD wherein the display 52 is separate and different from the display

within HMD; see figure 1, 9-10; column 3-5; column 10-12);

wherein said apparatus further comprises:

Player's viewpoint augmented reality presentation means for superimposing the virtual

object viewed from the player's viewpoint position in the real space viewed from the player's

viewpoint position (e.g., *figure 1, 9-10; column 3-5; column 10-12*);

wherein said player's viewpoint augmented reality presentation means includes

Second video sensing means for sensing a video of the real space viewed from the

player's viewpoint position (*e.g., an external stereo camera setup slaved to the user's head*

movement so that the cameras track his head movement and provide the desired view of the

surroundings; column 1; and the tracking device 164 such as an RF beacon or a gyro compass

to follow the user's head movement and output coordinates that define the users FOV, or the

viewpoint position; figure 1, 9-10; column 3-5; column 10-12);

Player's viewpoint position acquiring means for acquiring information indicating the

player's viewpoint position (*e.g., an external stereo camera setup slaved to the user's head*

movement so that the cameras track his head movement and provide the desired view of the

surroundings; column 1; and the tracking device 164 such as an RF beacon or a gyro compass

to follow the user's head movement and output coordinates that define the users FOV, or the

viewpoint position; figure 1, 9-10; column 3-5; column 10-12);

Second video generation means for generating a video of the virtual object viewed from

the player's viewpoint position using the information indicating the player's view position (*e.g.,*

the distribution processor 24 uses the position and heading information including the

appropriate geographical range, class and hierarchical levels of symbols and audio tracks for

each user to obtain a subimage 42 of the wide FOV video signal 22; figure 1, 9-10; column 3-5;

column 10-12);

Second video composition means for composing an augmented reality video viewed from

the player's viewpoint position on the basis of the videos of the real space and the virtual object

viewed from the player's viewpoint position (*e.g., the distribution processor 24 uses the position*

and heading information including the appropriate geographical range, class and hierarchical

levels of symbols and audio tracks for each user to obtain a subimage 42 of the wide FOV video

signal 22; figure 1, 9-10; column 3-5; column 10-12); and

Display means for displaying to the player the augmented reality video viewed from the

player's viewpoint position (e.g., HMD; *figure 1, 9-10; column 3-5; column 10-12*).

Although Daily is silent to the claim limitation that "an image of player can be included

in a video sensed by said first video sensing unit", Daily discloses displaying a sub-image of the

wide FOV video signal and a user controllable viewpoint selector such as a head tracker for

tracking the user's head movement to select a user FOV from the wide FOV video signal

(column 5, lines 1-20). In so doing, an image of the user is included in a video of the wide FOV

captured by the fish eye lens 172 or geodesic array of sensors 170 (column 11-12). Therefore,

Daily discloses a head tracker for recording the user's head movement which is an image of the

player/user that can be included in the user's FOV video for display on the user's HMD.

Nevertheless, Ohshima discloses a CCD camera 240 for capturing an image of the player

into a pick-up image (e.g., column 18, lines 40-45), the so called marker image (column 13, lines

35-40) and the CCD camera 230 fixed above the center of the table can capture the entire surface

of the table within its field of view in which multi-valued image data of the surface of the table

sensed by the TV camera is acquired and the CCD cameras 240 fixed to the heads of the players

acquire marker images which are processed to detect positions of tracked markers falling within

the respective fields of view of the individual cameras (column 15, lines 35-40 and column 15,

lines 3-10). The two players can observe the surface of the table when they wear the HMDs. The

players observe a three-dimensional image displayed on the display screen to be superposed on

an image in the real space observed via optical system of the HMDs (column 12, lines 21-30).

The changes in posture of the head of the player (an image of the player) is detected by the CCD

camera 240 as changes in image sensed by the camera. In Fig. 7, the image as captured by the

CCD cameras 240 can be included in a video sensed by the video camera 230 within the image generation units 5050L and 5050R.

Therefore, having the combined teaching of Daily and Ohshima, one of the ordinary skill in the art would be able to include an image of the player/user in a video of the table or the wide angle FOV. Doing so would allow the customized image generation for a particular player/user (Ohshima Fig. 7 and Daily column 5, lines 1-20).

Claim 3:

The apparatus according to claim 1, characterized in that said player's viewpoint augmented reality presentation means further comprises: the second video generation means for generating a video of the virtual object viewed from said player's viewpoint position; and the display means for displaying to the player the video of the virtual object viewed from said player's viewpoint position on a display surface through which the player can visually see the real space.

Claim 3 recites all the limitations of claim 1 and adds the limitation of "the second video generation means" and "the display means." Daily teaches a video generation means and display means (e.g., *figure 1, 9-10; column 3-5; column 10-12*).

Claim 4:

The apparatus according to claim 1, characterized by further comprising information generation means for generating information that pertains to rendering of the virtual object, and in that said first video generation means and said second video generation means generate videos of the virtual object using the information that pertains to rendering of the virtual object.

Claim 4 recites all the limitations of claim 1 and adds the limitation of "information generation means" and "generation means generate videos." Daily teaches an information generation means (e.g., *figure 1, 9-10; column 3-5; column 10-12*).

Claim 6:

The apparatus according to claim 1, characterized in that parameters of said first video sensing means are known, and said first video generation means generates the video of the virtual object viewed from said first viewpoint position in accordance with the known parameters.

Claim 6 recites all the limitations of claim 1 and adds the limitation of "the known parameters." Daily teaches the known parameters such as the focal length of the CCD video camera and measured plane's coordinates by GPS sensors, and input parameters such as the desired resolution, the object's focal length, orientation and Cartesian coordinates on the object's image plane where the object is either the image source or the user display (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 7:

The apparatus according to claim 1, characterized in that some of parameters of said first video sensing means are variable, said apparatus further comprises measurement means for measuring changes of the parameters, and said first video generation means generates the video of the virtual object viewed from said first viewpoint position in accordance with the parameters measured by said measurement means.

Claim 7 recites all the limitations of claim 1 and adds the limitation of "variable

parameters" and "measurement means." Daily teaches measuring the plane's positions are

variables of the plane's coordinates in which the coordinate values are measured by the GPS

sensors (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 8:

The apparatus according to claim 7, characterized in that the parameters of said first

video sensing means measured by said measurement means include at least one of a viewpoint

position/posture, and zoom ratio.

Claim 8 recites all the limitations of claim 7 and adds the limitation of "position/posture

information." Daily teaches the plane's positions are variables of the plane's coordinates which

determine the position/posture of the CCD video cameras and the zoom ratios are determined by

the zooming in and out parameters inputted by the user. Daily also teaches generating and

correcting view position and posture of the passengers (*figure 1, 9-10; column 3-5; column 7-*

12).

Claim 9:

The apparatus according to claim 1, characterized in that when a plurality of first video

sensing means equivalent to said first video sensing means are present, said apparatus further

comprises selection means for receiving a plurality of videos of the real space from said first

viewpoint position from the plurality of first video sensing means, and outputting a video of the

real space viewed from said first viewpoint position from one selected first video sensing means

to said first video composition means, and said first video composition means generates a video of the virtual object viewed from said first viewpoint position using parameters of the first video sensing means selected by said selection means.

Claim 9 recites all the limitations of claim 1 and adds the limitation of "selection means for receiving a plurality of first video sensing means."

Daily teaches selecting of the image regions as captured by a plurality of video cameras by zooming in and out the video scene in the real space. Daily also teaches a plurality of video cameras for sensing a scene below or around the plane where image signals that represent an environment scene of a real space and the user's zooming in and out video scene (*figure 1, 9-10; column 3-5; column 7-12*).

2.   Claim 10:

The claim 10 is a rephrasing of the claim 1 in a method form. The claim is rejected for the same reason as set forth in claim 1.

Claim 12:

The apparatus according to claim 10, characterized in that said player's viewpoint augmented reality presentation step further comprises: the second video generation step of generating a video of the virtual object viewed from said player's viewpoint position; and the display step of displaying to the player the video of the virtual object viewed from said player's viewpoint position on a display surface through which the player can visually see the real space.

Claim 12 recites all the limitations of claim 10 and adds the limitation of "the second video generation step" and "the display step."

Daily teaches the second video generation step and the display step including the video generation in accordance to the user's zooming in and out parameters and the HMD for viewing the video scene (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 13:

The method according to claim 10, characterized by further comprising information generation step of generating information that pertains to rendering of the virtual object, and in that said first video generation step and said second video generation step generate videos of the virtual object using the information that pertains to rendering of the virtual object.

Claim 13 recites all the limitations of claim 10 and adds the limitation of "information generation step" and "first and second generation steps to generate videos."

Daily teaches the information generation step and the first and second generation steps to generate videos (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 14:

The apparatus according to claim 13, characterized in that said information generation step includes the step of generating information of an outer appearance of the virtual object and information of a position/posture of the virtual object as the information that pertains to rendering of the virtual object.

Claim 14 recites all the limitations of claim 13 and adds the limitation of "generating

information of an outer appearance of the virtual object and information of a position/posture of

the virtual object."

Daily teaches capturing the plane's coordinates, generating and correcting view position

and posture of the passengers, zooming in and out the video signal, and selecting the local FOV

thereby correcting the viewpoint position/posture of the virtual object (*figure 1, 9-10; column 3-*

5; column 7-12).

Claim 15:

The method according to claim 10, characterized in that parameters of said first video

sensing means are known, and said first video generation step includes the step of generating the

video of the virtual object viewed from said first viewpoint position in accordance with the

known parameters.

Claim 15 recites all the limitations of claim 10 and adds the limitation of "the known

parameters." Daily teaches the known parameters such as the focal length of the CCD video

camera and measured plane's coordinates by GPS sensors, and the video scenes can be adjusted

in accordance to the desired resolution, the object's focal length, orientation and Cartesian

coordinates on the object's image plane where the object is either the image source or the user

display (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 16:

The method according to claim 10, characterized in that some of parameters of means for

sensing a video viewed from said first viewpoint position are variable, said method further

comprises the measurement step of measuring changes of the parameters, and said first video

generation step includes the step of generating the video of the virtual object viewed from said

first viewpoint position in accordance with the parameters measured in the measurement step.

Claim 16 recites all the limitations of claim 10 and adds the limitation of "variable

parameters" and "measurement step." Daily teaches measuring the plane's coordinates which are

variables as plane moves. Daily further teaches correcting view position and posture of the

passengers and zooming in and out the video scene (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 17:

The method according to claim 16, characterized in that the parameters of the means for

sensing a video viewed from said first viewpoint position measured in the measurement step

include at least one of a viewpoint position/posture, and zoon ratio.

Claim 17 recites all the limitations of claim 16 and adds the limitation of

"position/posture information." Daily teaches the plane's positions are variables of the plane's

coordinates which determine the position/posture of the CCD video cameras and the zoom ratios

are determined by the zooming in and out parameters inputted by the user. Daily also teaches

generating and correcting view position and posture of the passengers (*figure 1, 9-10; column 3-*

5; column 7-12).

Claim 18:

The method according to claim 10, characterized in that when a plurality of means for

sensing a video viewed from said first viewpoint position are present, said method further

comprises the selection step of receiving a plurality of videos of the real space viewed from a

first viewpoint position from the plurality of means for sensing a video viewed from said first

viewpoint position, and outputting the video of the real space viewed from a first viewpoint

position input from one selected means for sensing a video of said first viewpoint position to

means for compositing a first viewpoint video, and said first video composition step includes the

step of generating a video of the virtual object viewed from said first viewpoint position using

parameters of the means for sensing a video viewed from a first viewpoint position selected in

the selection step.

Claim 18 recites all the limitations of claim 10 and adds the limitation of "selection step

for receiving a plurality of videos."

Daily teaches selecting of the image regions as captured by a plurality of video cameras

by zooming in and out the video scene in the real space. Daily also teaches a plurality of video

cameras for sensing a scene below or around the plane where image signals that represent an

environment scene of a real space and the user's zooming in and out video scene *(figure 1, 9-10;*

column 3-5; column 7-12).

3.   Claims 28-29:

Referring to claims 28-29, Daily discloses a mixed reality presentation system that

generates and presents a virtual image in a real space *(figure 1, 9-10; column 3-5; column 10-*

12). However, the reference is silent on a printing means in connection to the mixed reality

presentation apparatus. It is common that a computer system has a printing means attached to

them. Therefore, it would have been obvious to one having ordinary skill in the art to have

incorporated a printing means in the mixed reality presentation apparatus of Daily because such

construction is rather conventional. A person of ordinary skill in the art would be motivated to

have incorporated a printing means to the Daily's mixed reality presentation apparatus to further

provide a paper copy of still images of the real images that have been displayed on the display

devices of Daily.

4.   Claim 31:

The claim 31 encompasses the same scope of invention as that of claim 1. The claim is

subject to the same reasons set forth in claim 1.

5.   Claim 32:

The claim 32 encompasses the same scope of invention as that of claim 1. The claim is

subject to the same reasons set forth in claim 1.

Claims 19 and 24-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Daily

U.S. Patent No. 6,317,127 (Daily) in view of Ohshima et al. U.S. Patent No. 6,522,312

(Ohshima), Latypov U.S. Patent No. 6,624,853 (Latypov) and Sato U.S. Patent No. 6,445,815

(hereinafter Sato).

6.   Claim 19:

(1) The claim 19 encompasses the same scope of invention as that of claim 1 except

additional claimed limitation of "a storage medium storing a program code.

(2) It is unclear whether Daily and Ohshima have implicitly taught a storage medium

storing a program code.

(3) However, Sato discloses the claimed limitation of a storage medium that stores an

image processing program, which is implemented on a computer and continuously presents

three-dimensional images to an observer/player, storing a program code of an augmented reality,

a depth estimation program code, a depth image generation program code, a position/posture

information estimation program code, a warping program code and a program code of presenting

to the observer three-dimensional images. The Sato reference implicitly teaches a program code

including the augmented reality presentation step of generating and presenting a virtual image in

a real space in which an image of merged real objects and virtual objects are displayed in LCDs

103 in an optical see-through head mounted device (column 1, lines 13-23). The Sato reference

also implicitly teaches a position/posture estimation module 201 that outputs three-dimensional

motions from a viewpoint position of the camera to right and left viewpoint positions of the

player (column 12, lines 54-65). The Sato reference further teaches a depth image generation

module 300 that uses position/posture information input from the position/posture estimation

module 201 as that for CG rendering and which generates an augmented reality image using the

three-dimensional CG database in accordance with the distance to an object in the real world

expressed by the depth image and presents it on the LCDs 103 (column 12, lines 44-50) and a

depth warping module 203 to inversely project a depth image ID acquired at a viewpoint having

position/posture information into a space, and to re-project it onto the imaging plane of the

virtual camera with the focal length of the virtual camera assumed at the viewpoint having an

estimated position/posture value by the viewpoint position/posture module 201 (column 13, lines 32-48).

(4) Daily at least suggests program codes illustrated in a variety of flow charts (Figs. 5-9).

(5) One having the ordinary skill in the art would have been motivated to do this because it would have provided the installation and implementation of the image processing on other systems.

Claim 24:

The medium according to claim 19, characterized in that parameters of means for sensing said first viewpoint video are known, and the program code of said first video generation step includes the step of generating the video of the virtual object viewed from said first viewpoint position in accordance with the known parameters.

Claim 24 recites all the limitations of claim 19 and adds the limitation of "the known parameters." Daily teaches the known parameters such as the focal length of the CCD video camera and measured plane's coordinates by GPS sensors, and the video scenes can be adjusted in accordance to the desired resolution, the object's focal length, orientation and Cartesian coordinates on the object's image plane where the object is either the image source or the user display (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 25:

The medium according to claim 19, characterized in that some of parameters of means for sensing a video viewed from said first viewpoint position are variable, the program code of said medium further comprises the measurement step of measuring changes of the parameters, and the program code of said first video generation step includes the step of generating the video of the virtual object viewed from said first viewpoint position in accordance with the parameters measured in the measurement step.

Claim 25 recites all the limitations of claim 19 and adds the limitation of "variable parameters" and "measurement step." Daily teaches measuring the plane's coordinates which are variables as plane moves. Daily further teaches correcting view position and posture of the passengers and zooming in and out the video scene (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 26:

The medium according to claim 25, characterized in that the parameters of the means of sensing a video viewed from said first viewpoint position measured in the measurement step include at least one of a viewpoint position/posture, and zoon ratio.

Claim 26 recites all the limitations of claim 25 and adds the limitation of "position/posture information." Daily teaches the plane's positions are variables of the plane's coordinates which determine the position/posture of the CCD video cameras and the zoom ratios are determined by the zooming in and out parameters inputted by the user. Daily also teaches generating and correcting view position and posture of the passengers (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 27:

The medium according to claim 19, characterized in that when a plurality of means for

sensing a video viewed from said first viewpoint position are present, said medium further

comprises a program code of the selection step of receiving a plurality of videos of the real

space viewed from a first viewpoint position from the plurality of means for sensing a video

viewed from said first viewpoint position, and outputting the video of the real space viewed from

a first viewpoint position input from one selected means for sensing a video of said first

viewpoint position to means for compositing a first viewpoint video, and the program code of

said first video composition step includes the step of generating a video of the virtual object

viewed from said first viewpoint position using parameters of the means for sensing a video

viewed from a first viewpoint position selected in the selection step.

Claim 27 recites all the limitations of claim 19 and adds the limitation of "selection step

for receiving a plurality of videos."

Daily teaches selecting of the image regions as captured by a plurality of video cameras

by zooming in and out the video scene in the real space. Daily also teaches a plurality of video

cameras for sensing a scene below or around the plane where image signals that represent an

environment scene of a real space and the user's zooming in and out video scene (*figure 1, 9-10;*

column 3-5; column 7-12).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665.

The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mike Razavi can be reached on (571) 272-7664. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

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